Storm Water Management Plan
For Priority Projects
(Major SWMP)

The Major Stormwater Management Plan (Major SWMP) must be completed in its entirety and accompany applications to the County for a permit or approval associated with certain types of development projects. To determine whether your project is required to submit a Major or Minor SWMP, please reference the County's Stormwater Intake Form for Development Projects.

Project Name:	Anderson TPM 21155
Permit Number (Land Development Projects):	
Work Authorization Number (**CIP only**):	
Applicant:	Eric Anderson
Applicant's Address:	20253 Elfin Forest Road Escondido, CA 92027
Plan Prepare By (*Leave blank if same as applicant*):	Hadley Johnson William Karn Surveying, Inc. 129 W. Fig St., Fallbrook CA 92028
Date:	July 31, 2008
Revision Date (If applicable):	Feb 11, 2009

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9926) requires all applications for a permit or approval associated with a Land Disturbance Activity to be accompanied by a Storm Water Management Plan (SWMP) (section 67.806.b). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority development project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

Project Stages	Does the SWMP need revisions?		If YES, Provide Revision Date
	YES	NO	
TPM		✓	

Instructions for a Major SWMP can be downloaded at
http://www.sdcounty.ca.gov/dpw/watersheds/susmp/susmp.html

Completion of the following checklists and attachments will fulfill the requirements of a Major SWMP for the project listed above.

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PROJECT DESCRIPTION

Please provide a brief description of the project in the following box. Please include:

- Project Location
- Project Description
- Physical Features (Topography)
- Surrounding Land Use
- Proposed Project Land Use
- Location of dry weather flows (year-round flows in streams, or creeks) within project limits, if applicable

PROJECT LOCATION: The project is located 1000 ft. north of Via Puerta Del Sol on Via Del Sol., Bonsall, CA

PROJECT DESCRIPTION: A proposed minor subdivision of 5.85 +/- acre parcels into two parcels, 3.25 and 2.6 acres. The project fronts on a privately maintained paved road (Valle Del Sol) with existing overhead electric and 12" watermain with Via Del Sol.

PHYSICAL FEATURES: The property topography is gently rolling in a 15 to 20% slope downhill in an easterly direction from the access road Valle Del Sol . The property is planted to mostly bird of paradise and fern (agriculture) with an existing greenhouse and shed.

SURROUNDING LAND USE: Land use in the areas is large residential homes and agriculture.

PROPOSED LAND USE: The proposed project will be in conformance with surrounding land use residential and agriculture.

LOCATION DRY WEATHER FLOW; An existing swale along the north easterly property line with no dry weather flow noted.

PRIORITY DEVELOPMENT PROJECT DETERMINATION

Please check the box that best describes the project. Does the project meet one of the following criteria?

Table 1

PRIORITY DEVELOPMENT PROJECT	YES	NO
Redevelopment that creates or adds at least 5,000 net square feet of additional impervious surface area and falls under one of the criteria listed below.	✓	
Residential development of more than 10 units		✓
Commercial developments with a land area for development of greater than 1 acre		✓
Heavy industrial development with a land area for development of greater than 1 acre		✓
Automotive repair shop(s)		✓
Restaurants, where the land area for development is greater than 5,000 square feet		✓
Hillside development, in an area with known erosive soil conditions, where there will be grading on any natural slope that is twenty-five percent or greater, if the development creates 5,000 square feet or more of impervious surface		✓
Environmentally Sensitive Areas (ESA): All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. "Directly adjacent" means situated within 200 feet of the ESA. "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.		✓
Parking Lots 5,000 square feet or more or with 15 parking spaces or more and potentially exposed to urban runoff		✓
Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater		✓
Retail Gasoline Outlets (RGO) that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.		✓

Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered Priority Development Projects. Parking lots, buildings and other structures associated with utility projects are subject to the WPO requirements if one or more of the criteria above are met.

If you answered **NO** to all the questions, then **STOP**. Please complete a Minor SWMP for your project.

If you answered **YES** to any of the questions, please continue.

HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management issues.

Table 2

	QUESTIONS	YES	NO	Information
1.	Will the proposed project disturb 50 or more acres of land? (Including all phases of development)		✓	If YES, continue to 2. If NO, go to 6.
2.	Would the project site discharge directly into channels that are concrete-lined or significantly hardened such as with rip-rap, sackcrete, etc, downstream to their outfall into bays or the ocean?		✓	If NO, continue to 3. If YES, go to 6.
3.	Would the project site discharge directly into underground storm drains discharging directly to bays or the ocean?		✓	If NO, continue to 4. If YES, go to 6.
4.	Would the project site discharge directly to a channel (lined or un-lined) and the combined impervious surfaces downstream from the project site to discharge at the ocean or bay are 70% or greater?		✓	If NO, continue to 5. If YES, go to 6.
5.	Project is required to manage hydromodification impacts.		✓	Hydromodification Management Required as described in Section 67.812 b(4) of the WPO.
6.	Project is not required to manage hydromodification impacts.		✓	Hydromodification Exempt. Keep on file.

An exemption is potentially available for projects that are required (No. 5. in Table 2 above) to manage hydromodification impacts: The project proponent may conduct an independent geomorphic study to determine the project's full hydromodification impact. The study must incorporate sediment transport modeling across the range of geomorphically-significant flows and demonstrate to the County's satisfaction that the project flows and sediment reductions will not detrimentally affect the receiving water to qualify for the exemption.

STORMWATER QUALITY DETERMINATION

The following questions provide a guide to collecting information relevant to project stormwater quality issues. Please provide the following information in a printed report accompanying this form.

Table 3

	QUESTIONS	COMPLETED	NA
1.	Describe the topography of the project area.	10% to 25% slope easterly	
2.	Describe the local land use within the project area and adjacent areas.	Existing Nursery	
3.	Evaluate the presence of dry weather flow.	No flows	✓
4.	Determine the receiving waters that may be affected by the project throughout all phases of development (i.e., construction, maintenance and operation).	Bonsall H.S.A.	
5.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	None	
6.	Determine if there are any High Risk Areas (which is defined by the presence of municipal or domestic water supply reservoirs or groundwater percolation facilities) within the project limits.	None	✓
7.	Determine the Regional Board special requirements, including TMDLs, effluent limits, etc.		✓
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	10" to 15" per yr	
9.	Determine the soil classification, permeability, erodibility, and depth to groundwater for Treatment BMP consideration.	Very good percolation rate 10 to 20 min., rate	
10.	Determine contaminated or hazardous soils within the project area.		✓
11.	Determine if this project is within the environmentally sensitive areas as defined on the maps in Appendix A of the *County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects.*		✓
12.	Determine if this is an emergency project.		✓

WATERSHED

Please check the watershed(s) for the project.

☐ San Juan 901	☐ Santa Margarita 902	☑ San Luis Rey 903	☐ Carlsbad 904
☐ San Dieguito 905	☐ Penasquitos 906	☐ San Diego 907	☐ Sweetwater 909
☐ Otay 910	☐ Tijuana 911	☐ Whitewater 719	☐ Clark 720
☐ West Salton 721	☐ Anza Borrego 722	☐ Imperial 723	

Please provide the hydrologic sub-area and number(s)

Number	Name
903.12	Bonsall H.S.A.

Please provide the beneficial uses for Inland Surface Waters and Ground Waters. Beneficial Uses can be obtained from the Water Quality Control Plan for the San Diego Basin, which is available at the Regional Board office or at http://www.swrcb.ca.gov/rwqcb9/programs/basinplan.html.

SURFACE WATERS	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Inland Surface Waters		*	X	X					X	X		X		X		
Ground Waters		X	X	X												

*** Excepted from Municipal**

X Existing Beneficial Use
0 Potential Beneficial Use

POLLUTANTS OF CONCERN

Using Table 4, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

Table 4. Anticipated and Potential Pollutants Generated by Land Use Type

	General Pollutant Categories								
PDP Categories	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P	X
Commercial Development 1 acre or greater	P(1)	P(1)		P(2)	X	P(5)	X	P(3)	P(5)
Heavy industry /industrial development	X		X	X	X	X	X		
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	
Hillside Development >5,000 ft^2	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X		

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

Note: If other monitoring data that is relevant to the project is available. Please include as Attachment C.

CONSTRUCTION BMPs

Please check the construction BMPs that may be implemented during construction of the project. The applicant will be responsible for the placement and maintenance of the BMPs incorporated into the final project design.

- ☑ Silt Fence
- ☑ Fiber Rolls
- ☐ Street Sweeping and Vacuuming
- ☐ Storm Drain Inlet Protection
- ☑ Stockpile Management
- ☑ Solid Waste Management
- ☑ Stabilized Construction Entrance/Exit
- ☐ Dewatering Operations
- ☐ Vehicle and Equipment Maintenance
- ☐ Desilting Basin
- ☑ Gravel Bag Berm
- ☐ Sandbag Barrier
- ☑ Material Delivery and Storage
- ☑ Spill Prevention and Control
- ☑ Concrete Waste Management
- ☑ Water Conservation Practices
- ☑ Paving and Grinding Operations

☑ Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval.

EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

Complete the checklist below to determine if a proposed project will pose an "exceptional threat to water quality," and therefore require Advanced Treatment Best Management Practices.

Table 5

No.	CRITERIA	YES	NO	INFORMATION
1.	Is all or part of the proposed project site within 200 feet of waters named on the Clean Water Act (CWA) Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity? Current 303d list may be obtained from the following site: http://www.swrcb.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_reqtmdls.pdf		✓	If YES, continue to 2. If NO, go to 5.
2.	Will the project disturb more than 5 acres, including all phases of the development?			If YES, continue to 3. If NO, go to 5.
3.	Will the project disturb slopes that are steeper than 4:1 (horizontal: vertical) with at least 10 feet of relief, and that drain toward the 303(d) listed receiving water for sedimentation and/or turbidity?			If YES, continue to 4. If NO, go to 5.
4.	Will the project disturb soils with a predominance of USDA-NRCS Erosion factors k_f greater than or equal to 0.4?			If YES, continue to 6. If NO, go to 5.
5.	Project is not required to use Advanced Treatment BMPs.		✓	Document for Project Files by referencing this checklist.
6.	Project poses an "exceptional threat to water quality" and is required to use Advanced Treatment BMPs.			Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria

Exemption potentially available for projects that require advanced treatment:
Project proponent may perform a Revised Universal Soil Loss Equation, Version 2 (RUSLE 2), Modified Universal Soil Loss Equation (MUSLE), or similar analysis that shows to the County official's satisfaction that advanced treatment is not required

Now that the need for treatment BMPs has been determined, other information is needed to complete the SWMP.

SITE DESIGN

To minimize stormwater impacts, site design measures must be addressed. The following checklist provides options for avoiding or reducing potential impacts during project planning. If YES is checked, it is assumed that the measure was used for this project.

Table 6

	OPTIONS		YES	NO	N/A
1.	Has the project been located and road improvements aligned to avoid or minimize impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?		X		
2.	Is the project designed to minimize impervious footprint?		X		
3.	Is the project conserving natural areas where feasible?		X		
4.	Where landscape is proposed, are rooftops, impervious sidewalks, walkways, trails and patios be drained into adjacent landscaping?				X
5.	For roadway projects, are structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?				X
6.	Can any of the following methods be utilized to minimize erosion from slopes:				
	6.a.	Disturbing existing slopes only when necessary?	x		
	6.b.	Minimize cut and fill areas to reduce slope lengths?	X		
	6.c.	Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?			X
	6.d.	Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?			x
	6.e.	Rounding and shaping slopes to reduce concentrated flow?	X		
	6.f.	Collecting concentrated flows in stabilized drains and channels?			X

LOW IMPACT DEVELOPMENT (LID)

Each numbered item below is a LID requirement of the WPO. Please check the box(s) under each number that best describes the Low Impact Development BMP(s) selected for this project.

Table 7

1. Conserve natural Areas, Soils, and Vegetation-County LID Handbook 2.2.1
☑ Preserve well draining soils (Type A or B)
☐ Preserve Significant Trees
☐ Other. Description:
☐ 1. Not feasible. State Reason:
2. Minimize Disturbance to Natural Drainages-County LID Handbook 2.2.2
☑ Set-back development envelope from drainages
☑ Restrict heavy construction equipment access to planned green/open space areas
☐ Other. Description:
☐ 2. Not feasible. State Reason:
3. Minimize and Disconnect Impervious Surfaces (see 5) -County LID Handbook 2.2.3
☐ Clustered Lot Design
☑ Items checked in 5?
☐ Other. Description:
☐ 3. Not feasible. State Reason:
4. Minimize Soil Compaction-County LID Handbook 2.2.4
☑ Restrict heavy construction equipment access to planned green/open space areas
☑ Re-till soils compacted by construction vehicles/equipment
☑ Collect & re-use upper soil layers of development site containing organic materials
☐ Other. Description:
4. Not feasible. State Reason:
5. Drain Runoff from Impervious Surfaces to Pervious Areas-County LID Handbook 2.2.5

LID Street & Road Design Streets existing
☐ Curb-cuts to landscaping
☑ Rural Swales
☐ Concave Median
☐ Cul-de-sac Landscaping Design
☐ Other. Description:
LID Parking Lot Design
☐ Permeable Pavements
☑ Curb-cuts to landscaping
☐ Other. Description:
LID Driveway, Sidewalk, Bike-path Design
☐ Permeable Pavements
☑ Pitch pavements toward landscaping
☐ Other. Description:
LID Building Design
☐ Cisterns & Rain Barrels
☑ Downspout to swale
☐ Vegetated Roofs
☐ Other. Description:
LID Landscaping Design
☐ Soil Amendments
☑ Reuse of Native Soils
☑ Smart Irrigation Systems
☐ Street Trees
☐ Other. Description:
☐ 5. Not feasible. State Reason:

CHANNELS & DRAINAGES

Complete the following checklist to determine if the project includes work in channels.

Table 8

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project include work in channels?		✓		If YES go to 2 If NO go to 13.
2.	Will the project increase velocity or volume of downstream flow?				If YES go to 6.
3.	Will the project discharge to unlined channels?				If YES go to. 6.
4.	Will the project increase potential sediment load of downstream flow?				If YES go to 6.
5.	Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?				If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.				Continue to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.				Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.				Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.				Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.				
11.	"Hardening" natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development.				Continue to 12.
12.	Provide other design principles that are comparable and equally effective.				Continue to 13.
13.	End	✓			

SOURCE CONTROL

Please complete the following checklist for Source Control BMPs. If the BMP is not applicable for this project, then check N/A only at the main category.

Table 9

BMP			YES	NO	N/A
1.	**Provide Storm Drain System Stenciling and Signage**				✓
	1.a.	All storm drain inlets and catch basins within the project area shall have a stencil or tile placed with prohibitive language (such as: "NO DUMPING – DRAINS TO River") and/or graphical icons to discourage illegal dumping.			
	1.b.	Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area.			
2.	**Design Outdoors Material Storage Areas to Reduce Pollution Introduction**				
	2.a.	This is a detached single-family residential project. Therefore, personal storage areas are exempt from this requirement.	✓		
	2.b.	Hazardous materials with the potential to contaminate urban runoff shall either be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.			✓
	2.c.	The storage area shall be paved and sufficiently impervious to contain leaks and spills.			✓
	2.d.	The storage area shall have a roof or awning to minimize direct precipitation within the secondary containment area.			✓
3.	**Design Trash Storage Areas to Reduce Pollution Introduction**				
	3.a.	Paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash; or,			✓
	3.b.	Provide attached lids on all trash containers that exclude rain, or roof or awning to minimize direct precipitation.	✓		
4.	**Use Efficient Irrigation Systems & Landscape Design**				
	The following methods to reduce excessive irrigation runoff shall be considered, and incorporated and implemented where determined applicable and feasible.				
	4.a.	Employing rain shutoff devices to prevent irrigation after precipitation.	✓		
	4.b.	Designing irrigation systems to each landscape area's specific water requirements.	✓		
	4.c.	Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.	✓		
	4.d.	Employing other comparable, equally effective, methods to reduce irrigation water runoff.	✓		
5.	**Private Roads**		✓		

	BMP		YES	NO	N/A
	The design of private roadway drainage shall use at least one of the following				
	5.a.	Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.	✓		
	5.b.	Urban curb/swale system: street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter.			✓
	5.c.	Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to storm water conveyance system.			✓
	5.d.	Other methods that are comparable and equally effective within the project.			✓
6.	**Residential Driveways & Guest Parking**				
	The design of driveways and private residential parking areas shall use one at least of the following features.				
	6.a.	Design driveways with shared access, flared (single lane at street) or wheelstrips (paving only under tires); or, drain into landscaping prior to discharging to the storm water conveyance system.	✓		
	6.b.	Uncovered temporary or guest parking on private residential lots may be: paved with a permeable surface; or, designed to drain into landscaping prior to discharging to the storm water conveyance system.	✓		
	6.c.	Other features which are comparable and equally effective.			
7.	**Dock Areas**				✓
	Loading/unloading dock areas shall include the following.				
	7.a.	Cover loading dock areas, or design drainage to preclude urban run-on and runoff.			
	7.b.	Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.			
	7.c.	Other features which are comparable and equally effective.			
8.	**Maintenance Bays**				✓
	Maintenance bays shall include the following.				
	8.a.	Repair/maintenance bays shall be indoors; or, designed to preclude urban run-on and runoff.			
	8.b.	Design a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.			
	8.c.	Other features which are comparable and equally effective.			
9.	**Vehicle Wash Areas**				✓
	Priority projects that include areas for washing/steam cleaning of vehicles shall use the following.				
	9.a.	Self-contained; or covered with a roof or overhang.			
	9.b.	Equipped with a clarifier or other pretreatment facility.			
	9.c.	Properly connected to a sanitary sewer.			
	9.d.	Other features which are comparable and equally effective.			

	BMP		YES	NO	N/A
10.	**Outdoor Processing Areas**				✓
	Outdoor process equipment operations, such as rock grinding or crushing, painting or coating, grinding or sanding, degreasing or parts cleaning, waste piles, and wastewater and solid waste treatment and disposal, and other operations determined to be a potential threat to water quality by the County shall adhere to the following requirements.				
	10.a.	Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system following appropriate treatment in accordance with conditions established by the applicable sewer agency.			
	10.b.	Grade or berm area to prevent run-on from surrounding areas.			
	10.c.	Installation of storm drains in areas of equipment repair is prohibited.			
	10.d.	Other features which are comparable or equally effective.			
11.	**Equipment Wash Areas**				✓
	Outdoor equipment/accessory washing and steam cleaning activities shall be.				
	11.a.	Be self-contained; or covered with a roof or overhang.			
	11.b.	Be equipped with a clarifier, grease trap or other pretreatment facility, as appropriate			
	11.c.	Be properly connected to a sanitary sewer.			
	11.d.	Other features which are comparable or equally effective.			
12.	**Parking Areas**				✓
	The following design concepts shall be considered, and incorporated and implemented where determined applicable and feasible by the County.				
	12.a.	Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.			
	12.b.	Overflow parking (parking stalls provided in excess of the County's minimum parking requirements) may be constructed with permeable paving.			
	12.c.	Other design concepts that are comparable and equally effective.			
13.	**Fueling Area**				✓
	Non-retail fuel dispensing areas shall contain the following.				
	13.a.	Overhanging roof structure or canopy. The cover's minimum dimensions must be equal to or greater than the area within the grade break. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area. The fueling area shall drain to the project's treatment control BMP(s) prior to discharging to the storm water conveyance system.			
	13.b.	Paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete shall be prohibited.			
	13.c.	Have an appropriate slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of urban runoff.			

	BMP		YES	NO	N/A
	13.d.	At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.			

Please list other project specific Source Control BMPs in the following box. Write **N/A** if there are none.

Small Parcels N/A

TREATMENT CONTROL

To select a structural treatment BMP using Treatment Control BMP Selection Matrix (Table 10), each priority project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any), with the pollutants anticipated to be generated by the project (as identified in Table 5). Any pollutants identified by Table 5, which are also causing a Clean Water Act section 303(d) impairment of the receiving waters of the project, shall be considered primary pollutants of concern. Priority projects that are anticipated to generate a primary pollutant of concern shall select a single or combination of stormwater BMPs from Table 11, which **maximizes pollutant removal** for the particular primary pollutant(s) of concern.

Priority development projects that are **not** anticipated to generate a pollutant for which the receiving water is CWA 303(d) impaired shall select a single or combination of stormwater BMPs from Table 11, which are effective for pollutant removal of the identified secondary pollutants of concern, consistent with the "maximum extent practicable" standard.

Table 10. Treatment Control BMP Selection Matrix

Pollutants of Concern	Bioretention Facilities (LID)*	Settling Basins (Dry Ponds)	Wet Ponds and Wetlands	Infiltration Facilities or Practices (LID)*	Media Filters	High-rate biofilters	High-rate media filters	Trash Racks & Hydro -dynamic Devices
Coarse Sediment and Trash	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low

*Additional information is available in the County of San Diego LID Handbook.

NOTES ON POLLUTANTS OF CONCERN:

In Table 11, Pollutants of Concern are grouped as gross pollutants, pollutants that tend to associate with fine particles, and pollutants that remain dissolved.

Table 11

Pollutant	Coarse Sediment and Trash	Pollutants that tend to associate with fine particles during treatment	Pollutants that tend to be dissolved following treatment
Sediment	X	X	
Nutrients		X	X
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris	X		
Oxygen Demanding		X	
Bacteria		X	
Oil & Grease		X	
Pesticides		X	

A Treatment BMP must address runoff from developed areas. Please provide the post-construction water quality values for the project. Label outfalls on the BMP map. The Water Quality peak rate of discharge flow (Q_{WQ}) and the Water Quality storage volume (V_{WQ}) is dependent on the type of treatment BMP selected for the project.

Outfall	Tributary Area (acres)	Q_{WQ} (cfs)	V_{WQ} (ft^3)
Pcl 1 residence	0.3	0.1	720
Pcl 2 residence	0.3	0.1	720

Please check the box(s) that best describes the Treatment BMP(s) selected for this project.

Biofilters
☑ Bioretention swale
☐Vegetated filter strip
☐ Stormwater Planter Box (open-bottomed)
☐ Stormwater Flow-Through Planter (sealed bottom)
☐ Bioretention Area
☐ Vegetated Roofs/Modules/Walls
Detention Basins
☐ Extended/dry detention basin with grass/vegetated lining
☐ Extended/dry detention basin with impervious lining
Infiltration Basins
☐ Infiltration basin
☐ Infiltration trench
☐ Dry well
☐ Permeable Paving
☐ Gravel
☐ Permeable asphalt
☐ Pervious concrete
☐ Unit pavers, ungrouted, set on sand or gravel
☐ Subsurface reservoir bed
Wet Ponds or Wetlands
☐ Wet pond/basin (permanent pool)
☐ Constructed wetland
Filtration
☐ Media filtration
☐ Sand filtration
Hydrodynamic Separator Systems
☐ Swirl Concentrator
☐ Cyclone Separator
Trash Racks and Screens

Include Treatment Datasheet as Attachment E. The datasheet should include the following:	**COMPLETED**	**NO**
1. Description of how treatment BMP was designed. Provide a description for each type of treatment BMP.	✓	
2. Engineering calculations for the BMP(s)	N/A	

Please describe why the selected treatment BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a detailed explanation.

Proposed bio retention for these small areas less than 1/3 acre for each parcel. Bio retention is high in course sediment and trash removal.

MAINTENANCE

Please check the box that best describes the maintenance mechanism(s) for this project. Guidelines for each category are located in Chapter 5, Section 5.2 of the County SUSMP.

CATEGORY	SELECTED	
	YES	NO
First	✓	
Second[1]		✓
Third[1]		✓
Fourth		✓

Note:

1. Projects in Category 2 or 3 may choose to establish or be included in a Stormwater Maintenance Assessment District for the long-term maintenance of treatment BMPs.

ATTACHMENTS

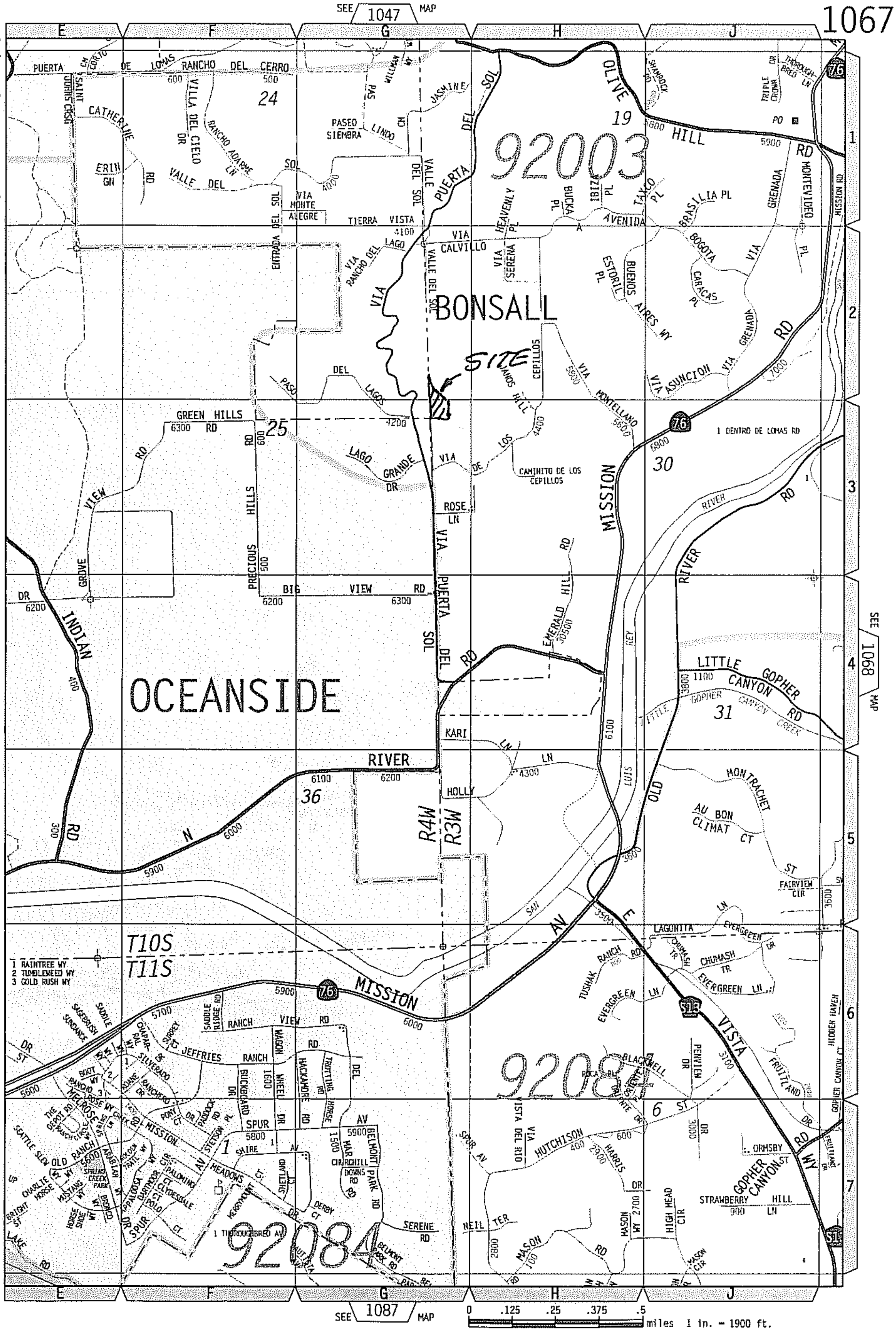
Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	✓	
B	Site Map	✓	
C	Relevant Monitoring Data		✓
D	LID and Treatment BMP Location Map	✓	
E	Treatment BMP Datasheets		✓
F	Operation and Maintenance Program for Treatment BMPs	✓	
G	Fiscal Resources	✓	
H	Certification Sheet	✓	
I	Addendum		✓

Note: Attachments A and B may be combined.

ATTACHMENT A

PROJECT LOCATION MAP


SEE 1047 MAP
SEE 1087 MAP
SEE 1068 MAP
© 2006 Rand McNally & Company
E
F
G
H
J
1
2
3
4
5
6
7
92003
BONSALL
OCEANSIDE
92084
SITE
PUERTA DE LOMAS
RANCHO DEL CERRO
CATHERINE
VILLA DEL CIELO DR
RANCHO ADARME LN
ERIN GN
VALLE DEL SOL
JASMINE
PASEO LINDO
PASEO SIEMBRA
VIA MONTE ALEGRE
TIERRA VISTA
VIA PUERTA DEL SOL
OLIVE HILL RD
HEAVENLY PL
BUCKA PL
IBIZA PL
TAXCO PL
AVENIDA
BRASILIA PL
GRENADA
MONTEVIDEO PL
MISSION RD
VIA CALVILLO
VIA SERENA PL
VIA RANCHO DEL LAGO
ENTRADA DEL SOL
VALLE DEL SOL
ESTORIL PL
BUENOS AIRES WY
BOGOTA
CARACAS PL
VIA GRENADA
VIA ASUNCION
VIA MONTELLANO
CEPILLOS
PASO DEL LAGOS
GREEN HILLS RD
LAGO GRANDE DR
VIA DE LOS
CAMINITO DE LOS CEPILLOS
1 DENTRO DE LOMAS RD
ROSE LN
PRECIOUS HILLS
BIG VIEW RD
VIEW RD
GROVE
INDIAN RD
EMERALD HILL RD
LITTLE GOPHER CANYON RD
LITTLE GOPHER CANYON CREEK
RIVER RD
OLD RIVER RD
SAN LUIS REY
KARI LN
HOLLY
N RIVER RD
MONTRACHET
AU BON CLIMAT CT
FAIRVIEW CIR
R4W
R3W
T10S
T11S
1 RAINTREE WY
2 TUMBLEWEED WY
3 GOLD RUSH WY
MISSION AV
E VISTA WY
LAGUNITA
EVERGREEN LN
CHUMASH TR
TUSHAK RANCH RD
SADDLE RIDGE RD
RANCH VIEW RD
JEFFRIES RANCH RD
WAGON WHEEL DR
HACKAMORE RD
TROTTING HORSE RD
BUCKBOARD DR
BLACKWELL
PERVIEW DR
HIDDEN HAVEN
GOPHER CANYON CT
FRUITLAND DR
SPUR AV
CHURCHILL DOWNS RD
BELMONT PARK RD
VISTA DEL RIO
HUTCHISON
HARRIS
ORMSBY
GOPHER CANYON RD
STRAWBERRY HILL LN
NEIL TER
MASON RD
MASON WY
HIGH HEAD CIR
SERENE RD
OLD RANCH
MEADOWS DR
PALOMINO
APPALOOSA
1 THOROUGHBRED AV
LAKE RD
0 .125 .25 .375 .5 miles 1 in. = 1900 ft.

ATTACHMENT B

SITE MAP

H.D.P.M. NO. LMAP 311R VPM

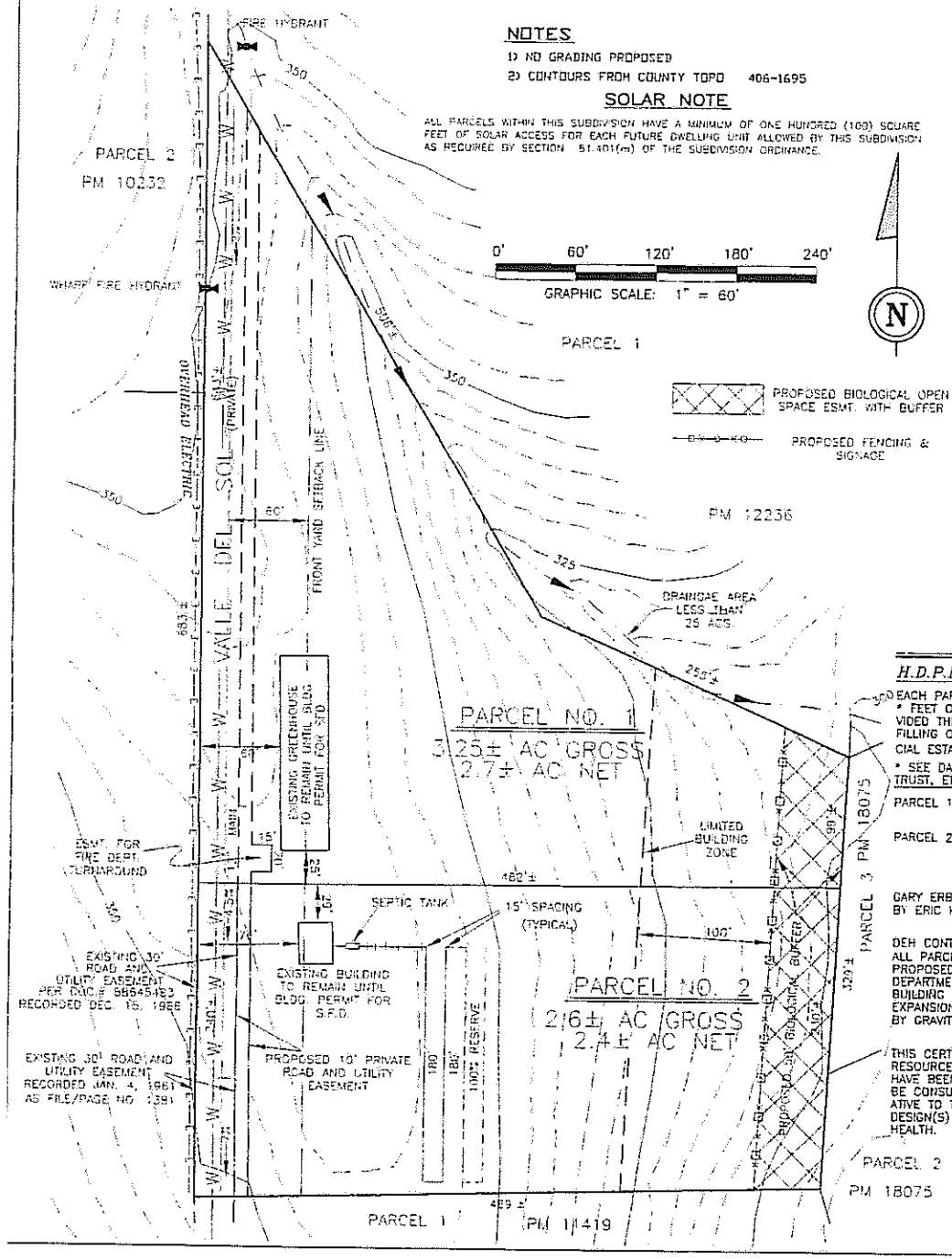
TENTATIVE PARCEL MAP# 21155

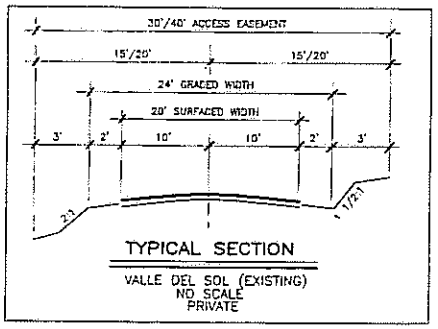
NOTES

1) NO GRADING PROPOSED
2) CONTOURS FROM COUNTY TOPO 406-1695

SOLAR NOTE

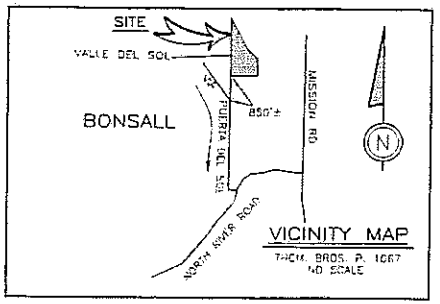
ALL PARCELS WITHIN THIS SUBDIVISION HAVE A MINIMUM OF ONE HUNDRED (100) SQUARE FEET OF SOLAR ACCESS FOR EACH FUTURE DWELLING UNIT ALLOWED BY THIS SUBDIVISION AS REQUIRED BY SECTION 81.401(m) OF THE SUBDIVISION ORDINANCE.





TYPICAL SECTION

VALLE DEL SOL (EXISTING)
NO SCALE
PRIVATE



VICINITY MAP

THOM. BROS. P. 1067
NO SCALE

HEALTH DEPARTMENT CERTIFICATE

H.D.P.M. LMAP 311R VPM411

EACH PARCEL IS APPROVED FOR A STANDARD SEPTIC TANK CONNECTED TO * FEET OF TILE DRAIN FIELD TO SERVE A THREE BEDROOM DWELLING PROVIDED THE ORIGINAL SOIL IS NOT DISTURBED IN ANY WAY, SUCH AS CUTTING, FILLING OR RIPPING. THIS DOES NOT CONSTITUTE APPROVAL FOR COMMERCIAL ESTABLISHMENTS.

* SEE DATA AND RECOMMENDATIONS UNDER THE NAME OF MARY ANDERSON TRUST, ET. AL. BY HADLEY JOHNSON, RCE 14870

PARCEL 1: 370' LEACH LINE – 3' TRENCH, 1FT. ROCK UNDER PIPE WITH 100% RESERVE.

PARCEL 2: 370' LEACH LINE – 3' TRENCH, 1FT. ROCK UNDER PIPE WITH 100% RESERVE.

GARY ERBECK, DIRECTOR DEPARTMENT OF ENVIRONMENTAL HEALTH
BY ERIC KLEIN– REHS 7804 6/26/2008

DEH CONTROL # VPM 411

ALL PARCELS SHALL HAVE A LAYOUT OF THE SEWAGE DISPOSAL SYSTEM, PROPOSED STRUCTURES, CUTS AND FILLS APPROVED BY THE SAN DIEGO DEPARTMENT OF ENVIRONMENTAL HEALTH PRIOR TO THE APPROVAL OF THE BUILDING PERMIT AND/OR ISSUANCE OF A SEPTIC TANK PERMIT. ADDITIONAL EXPANSION AREA OF 100% OF THE INITIAL TILE AREA SHALL BE PROVIDED BY GRAVITY FLOW FOR THE POTENTIAL EXPANSION IN THE EVENT OF FAILURE.

THIS CERTIFICATION DOES NOT IMPLY ALL CONDITIONS PURSUANT TO THE RESOURCE PROTECTION ORDINANCE AND THE GROUNDWATER ORDINANCE HAVE BEEN MET. THE DEPARTMENT OF PLANNING AND LAND USE SHOULD BE CONSULTED REGARDING THE APPLICATION OF THESE ORDINANCES RELATIVE TO THIS PROJECT. ANY RESULTANT CHANGES TO THE SEPTIC SYSTEM DESIGN(S) MUST BE RE-EVALUATED BY THE DEPARTMENT OF ENVIRONMENTAL HEALTH.

LAND DIVISION STATEMENT – OWNER'S CERTIFICATE

I HEREBY CERTIFY THAT I AM THE RECORD OWNER, AS SHOWN ON THE LATEST EQUALIZED COUNTY ASSESSMENT OF THE PROPERTY SHOWN ON THE TENTATIVE PARCEL MAP, AND/OR MY CONTIGUOUS OWNERSHIP WITHIN AND BEYOND THE BOUNDARIES OF THE TENTATIVE PARCEL MAP IS SHOWN. THE BASIS OF CREATION OF THE LOTS IN MY OWNERSHIP (E.G. PARCEL MAP, FINAL MAP, CERTIFICATE OF COMPLIANCE, RECORDED DEED BEFORE 2/1/72) AS INDICATED ON THE TENTATIVE. I UNDERSTAND THAT PROPERTY IS CONSIDERED CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS OR RAILROAD RIGHTS-OF-WAY. "FREEWAY" AS DEFINED IN SECTION 23.5 OF THE STREETS AND HIGHWAYS CODES, SHALL NOT BE CONSIDERED AS ROADS OR STREETS.

I FURTHER CERTIFY THAT I WILL NOT, BY THIS APPLICATION, CREATE OR CAUSE TO BE CREATED, OR WILL NOT HAVE PARTICIPATED IN THE CREATION OF MORE THAN FOUR PARCELS ON CONTIGUOUS PROPERTY UNLESS SUCH PARCELS WERE CREATED BY MAJOR SUBDIVISION. FOR PURPOSES OF THIS CERTIFICATION, THE TERM "PARTICIPATED" MEANS HAVING COOPERATED WITH OR ACTED IN A PLANNING, COORDINATE OR DECISION-MAKING CAPACITY IN A FORMAL OR INFORMAL ASSOCIATION OR PARTNERSHIP FOR THE PURPOSE OF DIVIDING REAL PROPERTY.

I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT. EXECUTED THIS 1st DAY OF Sept, 2008, AT _____, CALIFORNIA.

(ALL OWNERS MUST SIGN)

Horace U. Anderson Family Trust
HORACE U. ANDERSON FAMILY TRUST
DATED: AUG. 7, 1974

Mary C. Chamberlain
MARY C. CHAMBERLAIN TRUST
07/05/1988

Ada Anderson Successor Trustee 9/9/08
ADA ANDERSON TRUSTEE AND SUCCESSOR

Mary Corry
MARY CORY, SUCCESSOR
12/23/08

ADDRESS: 20253 ELFIN FOREST RD.
ESCONDIDO, CA 92027

PHONE: (760) 471-1464

1. COMPLETE TAX ASSESSOR'S NUMBER: 126-080-15
2. ABBREVIATED LEGAL DESCRIPTION: POR. LOT 2 SEC.30, T.10S., R.3W.
3. GENERAL PLAN REGIONAL CATEGORY: E.D.A.
4. COMMUNITY/SUBREGIONAL PLAN AREA: BONSALL COMMUNITY PLAN
5. LAND USE DESIGNATION(S): 17 ESTATE
6. EXISTING ZONING: RR.5
7. TAX RATE AREA: 57008

USE REGULATIONS	RR.5
ANIMAL REGS	L
DENSITY	.5
LOT SIZE	2 AC.
BUILDING TYPE	C
MAX. FLR. AREA	–
FLR. AREA RATIO	–
HEIGHT	G
COVERAGE	–
SETBACK	W
OPEN SPACE	–
SPECIAL AREA REGS	–

8. ASSOCIATED PERMITS: N/A
9. LOCATION AND STATUS OF EXISTING LEGAL ACCESS TO SUBJECT PROPERTY FROM A PUBLICLY MAINTAINED ROAD. (i.e. RECORDED EASEMENT, UNRECORDED IDENTIFY AND SPECIFY WIDTH): EXISTING 30' PRIVATE ROAD ESMT.
10. WATER SOURCE/ WATER DISTRICT: RAINBOW MUNICIPAL WATER DISTRICT
11. SEPTIC/ SEWER DISTRICT: SUBSURFACE DISPOSAL
12. FIRE DISTRICT: NORTH COUNTY FIRE PROTECTION DISTRICT
13. SCHOOL DISTRICT: BONSALL ELEMENTARY AND FALLBROOK UNION HIGH SCHOOL

SIGNATURE OF APPLICANT

NAME: ERIC ANDERSON
ADDRESS: 20253 ELFIN FOREST RD.
ESCONDIDO, CA 92027
PHONE: (760) 471-1464

Hadley Johnson 10/10/08
HADLEY JOHNSON RCE 14870

PREPARED BY:
WM. KARN SURVEYING INC.
129 WEST FIG ST.
FALLBROOK, CA 92028
760-729-1134
RCE 14870

L:\SC14\DATA\685J\

ATTACHMENT C

RELEVANT MONITORING DATA

(NOTE: PROVIDE RELEVANT WATER QUALITY MONITORING DATA IF AVAILABLE.)

N/A

ATTACHMENT D

LID AND TREATMENT BMP LOCATION MAP

PRELIMINARY GRADING PLAN

TENTATIVE PARCEL MAP# 21155

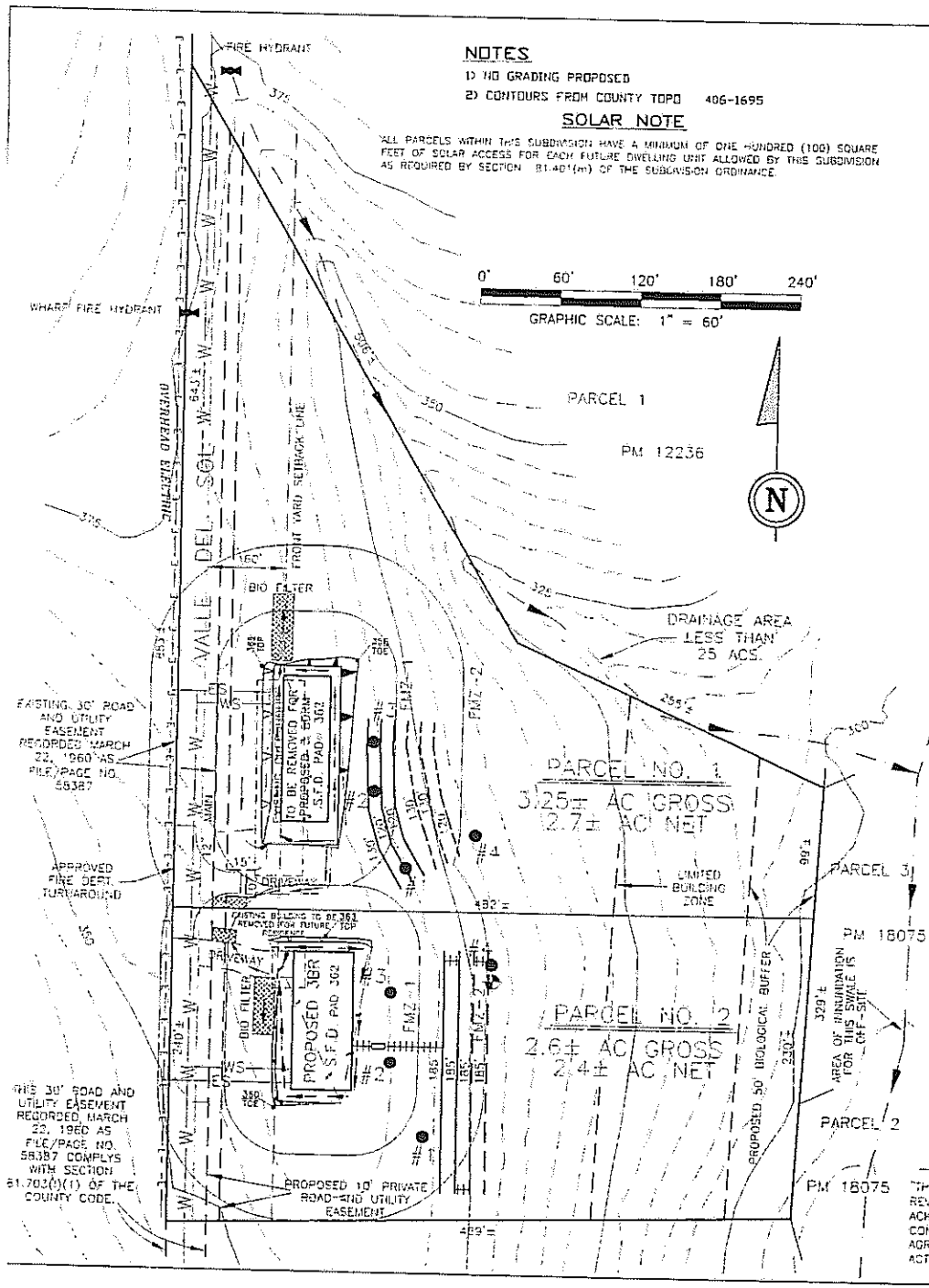
NOTES

1) NO GRADING PROPOSED

2) CONTOURS FROM COUNTY TOPO 406-1695

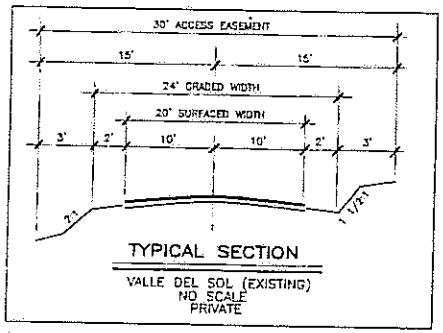
SOLAR NOTE

ALL PARCELS WITHIN THIS SUBDIVISION HAVE A MINIMUM OF ONE HUNDRED (100) SQUARE FEET OF SOLAR ACCESS FOR EACH FUTURE DWELLING UNIT ALLOWED BY THIS SUBDIVISION AS REQUIRED BY SECTION 81.401(m) OF THE SUBDIVISION ORDINANCE.



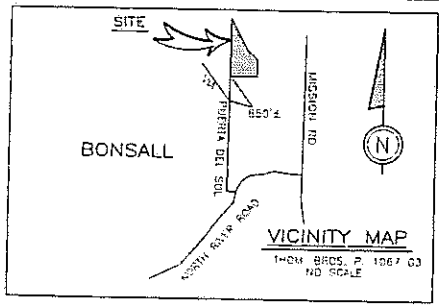
0' 60' 120' 180' 240'

GRAPHIC SCALE: 1" = 60'



TYPICAL SECTION

VALLE DEL SOL (EXISTING)
NO SCALE
PRIVATE



VICINITY MAP

THOM BROS. P. 1067 G3
NO SCALE

LEGEND

YARDAGE QUANTITIES

		YARDAGE CUT 2:1 RATIO	YARDAGE FILL 2:1 RATIO
①	PARCEL 1 3.25± AC. GROSS 2.8± AC. NET	625 C.Y. TOP EL=368	625 C.Y. TOE EL=356
②	PARCEL 2 2.6± AC. GROSS 2.4± AC. NET	150 C.Y. TOP EL=363	150 C.Y. TOE EL=360

2%

DIRECTION OF DRAINAGE & PERCENT OF GRADE

LEGEND

ITEM	S.D.R.S.D./B.M.P.*	SYMBOL
EXIST. CONTOUR		350
PROP. CONTOUR		350
FILL SLOPE - 2:1	S5-7*	FILL
CUT SLOPE - 1.5:1	S5-7*	CUT
PROP. SPOT ELEVATION		650
6' EARTHEN BERM	S5-9	6 6
PROP. EARTHEN BROW DITCH	S5-9	
PROP. ROCK R.P. RAP (10'X10'X1.5') #2 BACKING OVER 1/4" GRAVEL FILTER BLANKET(0.5' THICK). TYPE 2, V=7-8 FT./SEC.	D-40/S5-10*	
BIO FILTER RETENTION		

NOTE

"THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMISSIONS BEFORE COMMENCING SUCH ACTIVITY."

LAND DIVISION STATEMENT – OWNER'S CERTIFICATE

I HEREBY CERTIFY THAT I AM THE RECORD OWNER, AS SHOWN ON THE LATEST EQUALIZED COUNTY ASSESSMENT OF THE PROPERTY SHOWN ON THE TENTATIVE PARCEL MAP. ALL OF MY CONTIGUOUS OWNERSHIP WITHIN AND BEYOND THE BOUNDARIES OF THE TENTATIVE PARCEL MAP IS SHOWN. THE BASIS OF CREATION OF THE LOTS IN MY OWNERSHIP (E.G. PARCEL MAP, FINAL MAP, CERTIFICATE OF COMPLIANCE, RECORDED DEED BEFORE 2/1/72) AS INDICATED ON THE TENTATIVE. I UNDERSTAND THAT PROPERTY IS CONSIDERED CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS OR RAILROAD RIGHTS-OF-WAY. "FREEWAY" AS DEFINED IN SECTION 23.5 OF THE STREETS AND HIGHWAY CODES, SHALL NOT BE CONSIDERED AS ROADS OR STREETS.

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I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT. EXECUTED THIS _____ DAY OF _____, 2009, AT _____, CALIFORNIA.

(ALL OWNERS MUST SIGN)

HORACE V. ANDERSON FAMILY TRUST — MARY E. CHAMBERLAIN TRUST DATED 07/05/1988

ADA ANDERSON TRUSTEE AND SUCCESSOR — MARY C. CORAL, SUCCESSOR

ADDRESS: 20253 ELFIN FOREST RD.
ESCONDIDO, CA 92027

PHONE: (760) 471-1464

1. COMPLETE TAX ASSESSOR'S NUMBER: 126-080-15
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5. LAND USE DESIGNATION(S): 17 ESTATE
6. EXISTING ZONING: RR-5
7. TAX RATE AREA: 57008

USE REGULATIONS	RR-5
ANIMAL REGS.	L
DENSITY	5
LOT SIZE	2 AC.
BUILDING TYPE	C
MAX FIR AREA	–
FIR AREA RATIO	–
HEIGHT	G
COVERAGE	–
SETBACK	W
OPEN SPACE	–
SPECIAL AREA REGS.	–

8. ASSOCIATED PERMITS: N/A
9. LOCATION AND STATUS OF EXISTING LEGAL ACCESS TO SUBJECT PROPERTY FROM A PUBLICLY MAINTAINED ROAD. (i.e. RECORDED EASEMENT, UNRECORDED IDENTIFY AND SPECIFY WIDTH): EXISTING 30' PRIVATE ROAD ESMT.
10. WATER SOURCE/ WATER DISTRICT: RAINBOW MUNICIPAL WATER DISTRICT
11. SEPTIC/ SEWER DISTRICT: SUBSURFACE DISPOSAL
12. FIRE DISTRICT: NORTH COUNTY FIRE PROTECTION DISTRICT
13. SCHOOL DISTRICT: BONSALL ELEMENTARY AND FALLBROOK UNION HIGH SCHOOL

ERIC ANDERSON
SIGNATURE OF APPLICANT
NAME: SAME AS ABOVE
ADDRESS: SAME AS ABOVE
PHONE: SAME AS ABOVE

HADLEY JOHNSON 10/2/09
RCE 14870

PREPARED BY:
WM. KARN SURVEYING INC.
129 WEST FIG ST.
FALLBROOK, CA 92028
760-726-1134
RCE 14870

PLAN

ATTACHMENT E

TREATMENT BMP DATASHEET

*(**NOTE:** POSSIBLE SOURCE FOR DATASHEETS CAN BE FOUND AT WWW.CABMPHANDBOOKS.COM. INCLUDE ENGINEERING CALCULATIONS FOR SIZING THE TREATMENT BMP.)*

BMP DATA SHEET

PARCEL NO. 1 AREA = 0.37 ACS. L = 170'
SOIL GROUP "C" H = 1.7'
2/3 0.36 + 1/3 0.78 S = 1%

Cr = 0.5

Tc = 2.5 + 11.5
Tc = 14

Q = CIA

I_{WQ} = 0.79 INS/HR

Q_{WQ} = 0.5(0.79)(0.37)
Q_{WQ} = 0.15 cfs

I100 = 4.0 INS/HR

Q_{100} = 0.5(4.0)(0.37)
Q_{100} = 0.74 cfs

PARCEL NO. 2 AREA = 0.37 ACS. L = 200'
SOIL GROUP "C" H = 2'
USE Cr = 0.5 S = 1%

Tc = 2.7 + 11.5
Tc = 14.2

Q = CIA

I_{WQ} = 0.78 INS/HR

Q_{WQ} = 0.5(0.78)(0.37)
Q_{WQ} = 0.14 cfs

I100 = 3.9 INS/HR

Q_{100} = 0.5(3.9)(0.37)
Q_{100} = 0.72 cfs

ATTACHMENT F

OPERATION AND MAINTENANCE PROGRAM FOR TREATMENT BMPS

Operation, maintenance and inspection will be the responsibility of the property owners of the property upon which the proposed bio filters and strips are located, and the maintenance will be by the property owner. The maintenance will vary depending on the number of storms and wet weather.

ATTACHMENT F

OPERATION AND MAINTENANCE PROGRAM FOR TREATMENT BMPS

APPENDIX Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.

						Labor			Equipment				Materials		Total	Comments
BIOFILTER – STRIPS and SWALES						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Preventive Maintenance and Routine Inspections																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Height of vegetation	Average vegetation height exceeds 12 inches, emergence of trees, or woody vegetation	Visual inspection of vegetation throughout strip/swale	Once during wet season, once during dry season (depending on growth)	Cut vegetation to an average height of 6 inches	Remove any trees, or woody vegetation.	10	43.83	438.3	one-ton truck & hydroseeder	2	28.84	57.68	string trimmer, rake, fork, bags, safety equipment	50	538.98	
Assess adequate vegetative cover	Less than 50 percent coverage in strip invert/swale or less than 70 percent on swale side slope	Visual inspection of strip/swale. Prepare a site schematic to record location and distribution of barren or browning spots to be restored. File the schematic for assessment of persistent problems.	Assess quantity needed in May each year late wet season and late dry season.	Reseed/revegetate barren spots by Nov.		8	43.83	349.04	one-ton truck & hydroseeder	1	48.15	48.15	seed	150	547.19	
				Bounty area to be restored, to a depth of 2-inches. Restore side slope coverage with hydroseed mixture.		0	43.83	0	one-ton truck & hydroseeder	0	28.84	0			0	
Inspect for debris accumulation	Debris or litter present	Visual observation	During routine trashing, per Districts schedule.	If after 2 applications (2 seasons) of reseeding/revegetating and growth is unsuccessful both times, an erosion blanket or equivalent protection will be installed over eroding areas		0	43.83	0	one-ton truck & hydroseeder	0	28.84	0	blanket	0	0	
				Remove litter, and debris.	None	0	0	0	one-ton truck & hydroseeder	0	0	0			0	
Inspect for accumulated sediment	Sediment at or near vegetation height, channeling of flow, inhibited flow due to change in slope.	Visual observation	Annually	Remove sediment. If flow is channeled, determine cause and take corrective action. If sediment becomes deep enough to change the flow gradient, remove sediment during dry season, characterize and properly dispose of sediment, and revegetate.		16	43.83	693.08	one-ton truck & hydroseeder	1	48.15	48.15	seed, testing and disposal of sediment	300	1048.23	once every three years
				Notify engineer to determine if regrading is necessary. If necessary, regrade to design specification and revegetate swale/strip. If regrading is necessary, the process should start in May. Revegetate strip/swale in Nov. Target completion prior to wet season.	None	2	43.83	87.28				0			87.28	
Inspect for burrows	Burrows, holes, mounds	Visual observation	Annually and after vegetation trimming.	Where burrows cause seepage, erosion and leakage, backfill timely.		0	0	0	one-ton truck & hydroseeder	0	28.84	0			0	
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, emergence of trees, woody vegetation, fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry season.	Corrective action prior to wet season. Consult engineer if an immediate solution is not evident.	Remove any trees, or woody vegetation.	16	43.83	698.08	one-ton truck & hydroseeder	2	28.84	57.68			751.76	
TOTAL BIO FILTER AND SWALES						62		2268.76				203.68		600	2872.42	

ATTACHMENT G

FISCAL RESOURCES

Bio Filter swale associated with pads and driveways will be maintained by the homeowner upon which the bio filter swale is located. The cost of the annual maintenance is listed on Attached "F" titled OPERATION AND MAINTENANCE PROGRAMS FOR TREATMENT B.M.P.

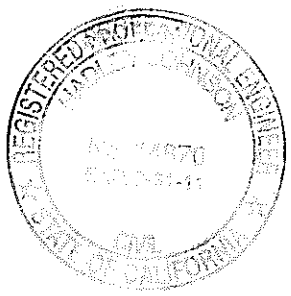
ATTACHMENT H

CERTIFICATION SHEET

This Stormwater Management Plan has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

Hadley Johnson, R.C.E. 14870

FEB 11, 2009
Date



ATTACHMENT I

ADDENDUM